

299-E28-91 (A6842) Log Data Report

Borehole Information:

Borehole: 299-E28-91 (A6842)		Site: 216-B-62 Crib			
Coordinates (WA St Plane)		GWL¹ (ft): None		GWL Date: 12/15/05	
North 136,853.445	East 573,029.791	Drill Date 07/83	Elevation (ft) (TOC) 678.5	Total Depth (ft) 50	Type Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	2.5	8 5/8	8	5/16	2.5	50

Borehole Notes:

Casing diameter and stickup measurements were acquired using a caliper and steel tape. Logging data acquisition is referenced to the top of casing (TOC). Grout was emplaced around the 8-in. casing to 20 ft.

Spectral Gamma Logging System (SGLS) Equipment Information:

Logging System: Gamma 1N		Type: SGLS (60%) SN: 45-TP22010A	
Effective Calibration Date: 11/29/05		Calibration Reference: DOE/EM-GJ1053-2005	
		Logging Procedure: MAC-HGLP 1.6.5, Rev. 0	

High Rate Logging System (HRLS) Equipment Information:

Logging System: Gamma 1C		Type: HRLS SN: 39-A314
Effective Calibration Date: 10/06/05	Calibration Reference: DOE/EM-GJ1019-2005	
	Logging Procedure: MAC-HGLP 1.6.5, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4 Repeat	
Date	12/20/05	12/20/05	12/20/05	12/20/05	
Logging Engineer	Spatz	Spatz	Spatz	Spatz	
Start Depth (ft)	50.0	20.0	15.0	13.0	
Finish Depth (ft)	20.0	15.0	3.0	4.0	
Count Time (sec)	100	20	100	100	
Live/Real	R	R	R	R	
Shield (Y/N)	N	N	N	N	

Log Run	1	2	3	4 Repeat	
MSA Interval (ft)	1.0	1.0	1.0	1.0	
ft/min	N/A ²	N/A	N/A	N/A	
Pre-Verification	AN005CAB	AN005CAB	AN005CAB	AN005CAB	
Start File	AN006000	AN006031	AN006037	AN006050	
Finish File	AN006030	AN006036	AN006049	AN006059	
Post-Verification	AN007CAA	AN007CAA	AN007CAA	AN007CAA	
Depth Return Error (in.)	N/A	N/A	-1.0	0.0	
Comments	No fine-gain adjustment	High-rate interval	No fine-gain adjustment	Repeat section	

High Rate Logging System (HRLS) Log Run Information:

Log Run	5	6 Repeat			
Date	12/22/05	12/22/05			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	21.0	36.0			
Finish Depth (ft)	15.0	33.0			
Count Time (sec)	300	300			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min	NA	NA			
Pre-Verification	AC153CAB	AC153CAB			
Start File	AC154000	AC154007			
Finish File	AC154006	AC154009			
Post-Verification	AC154CAA	AC154CAA			
Depth Return Error (in.)	N/A	0.0			
Comments	No fine gain adjustment made.	Repeat section.			

Logging Operation Notes:

Logging was conducted with a centralizer on the sonde for both SGLS and HRLS logging. Repeat sections were collected to evaluate the logging systems' performances.

Analysis Notes:

Analyst:	Pope	Date:	06/06/06	Reference:	GJO-HGLP 1.6.3, Rev. 0
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Pre-run and post-run verifications for the logging systems were performed before and after the day's data acquisition. Acceptance criteria were met for the verification spectra for both logging systems.

SGLS and HRLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated using the EXCEL worksheet template identified as G1NNov05.xls. A casing correction for 0.3125-in. thick casing was applied to the SGLS and HRLS data.

Results and Interpretations:

A continuous zone of ¹³⁷Cs was detected from 13 to 41 ft, with a short gap from 35 to 36 ft. A zone of high ¹³⁷Cs concentrations exists from approximately 16 to 20 ft. The maximum concentration is approximately

2,400 pCi/g at 16.0 ft. ¹³⁷Cs was also detected at 4 and 44 ft at concentrations just above the MDL³ (approx. 0.1 to 0.2 pCi/g).

Westinghouse Hanford Company logged this borehole in 1994 with the Radionuclide Logging System (RLS). The ¹³⁷Cs concentrations determined by the RLS, and decayed to 2005, show good agreement with the current SGLS measurements, suggesting stability of the ¹³⁷Cs contamination since at least 1994. Comparison of gross gamma plots from 1994 and 2005 also indicate no changes in the gamma profile of this borehole since at least 1994.

The repeat sections for the SGLS and HRLS indicate good agreement for the naturally occurring and man-made radionuclides, with few exceptions.

List of Plots:

Man-Made Radionuclides
Natural Gamma Logs
Combination Plot
Total Gamma and Dead Time
SGLS/RLS Man-made Comparison
Total Gamma Logs
Repeat Section of Natural Gamma Logs
HRLS Repeat Section

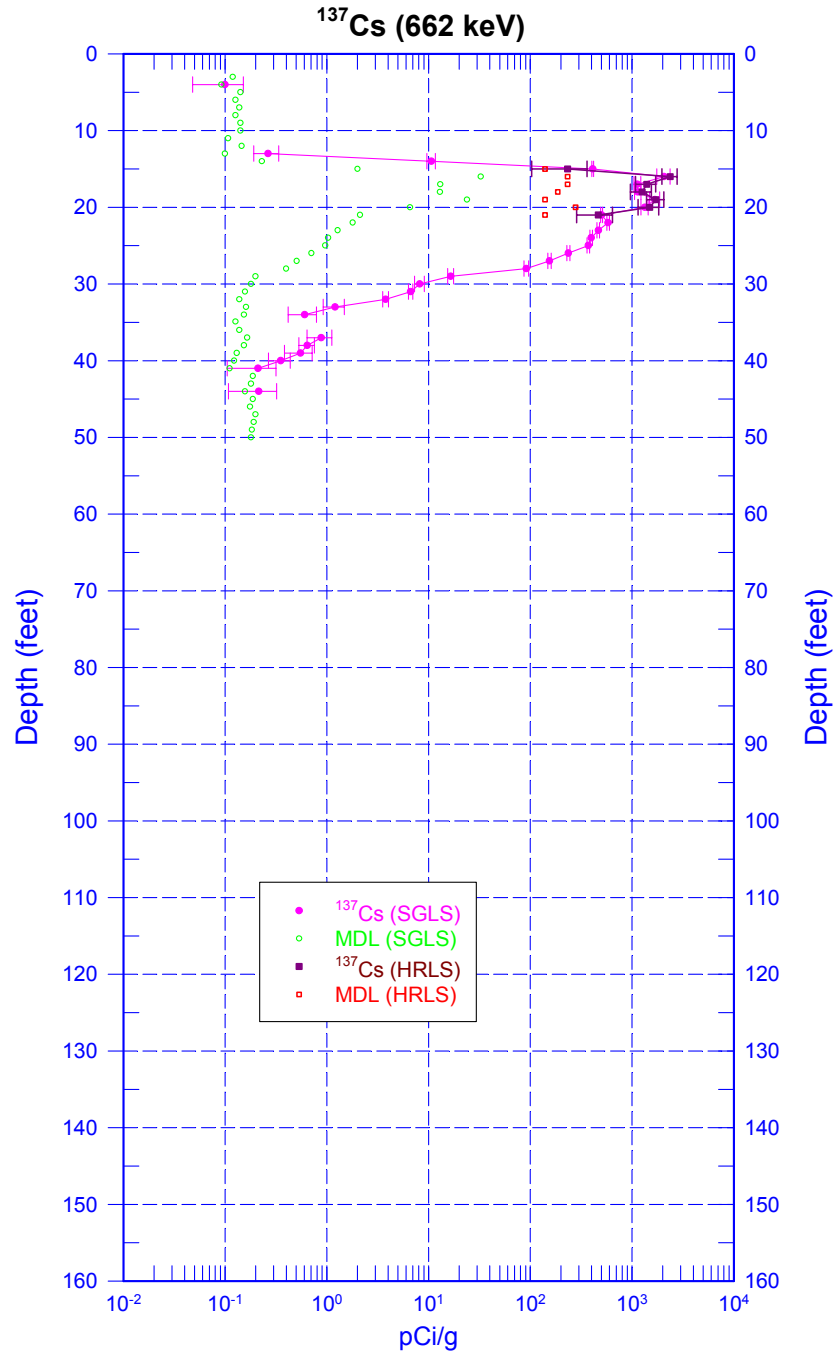
¹ GWL – groundwater level

² N/A – not applicable

³ MDL – minimum detectable level

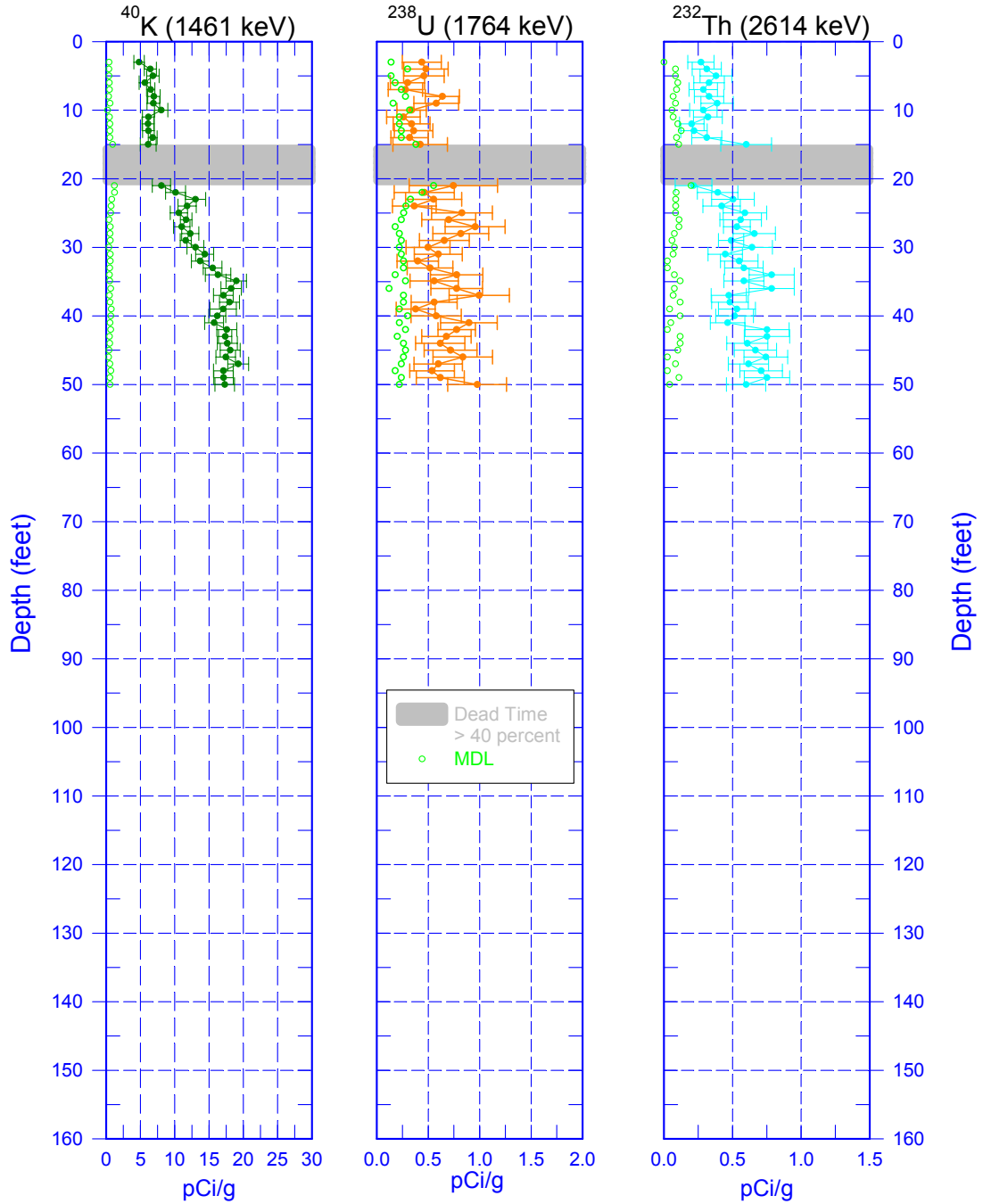
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Man-Made Radionuclides



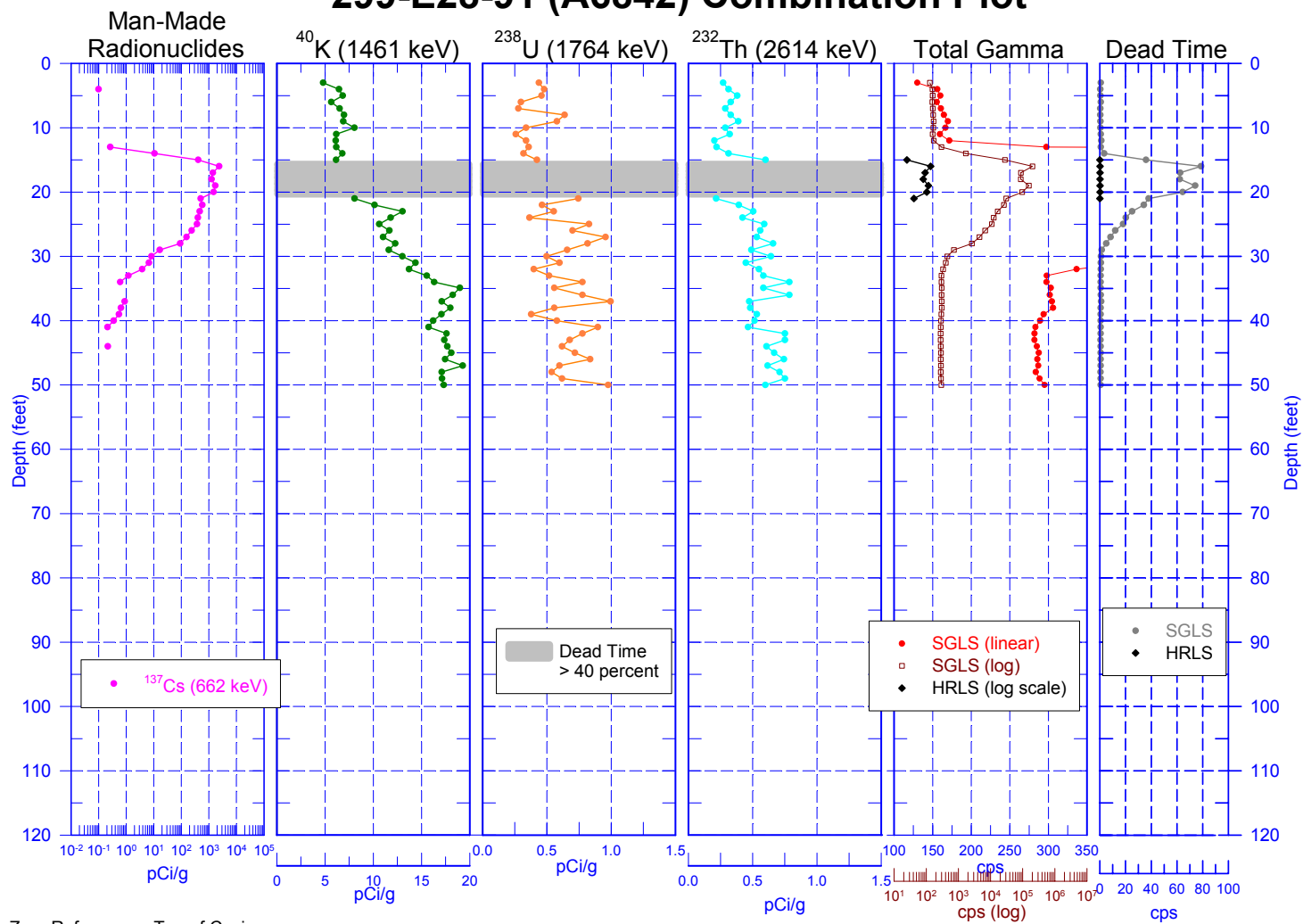
Zero Reference = Top of Casing

299-E28-91 (A6842) Natural Gamma Logs



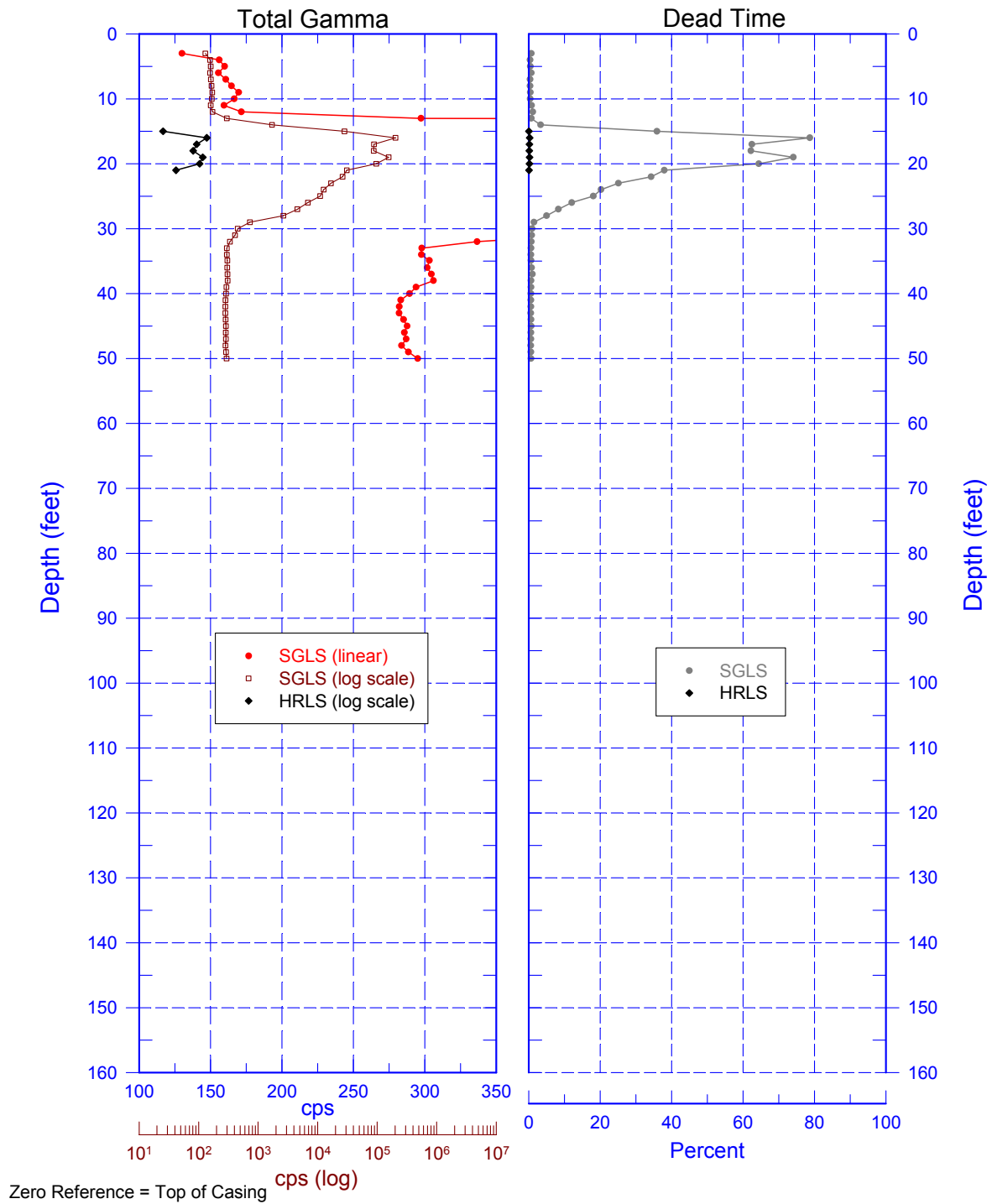
Zero Reference = Top of Casing

299-E28-91 (A6842) Combination Plot



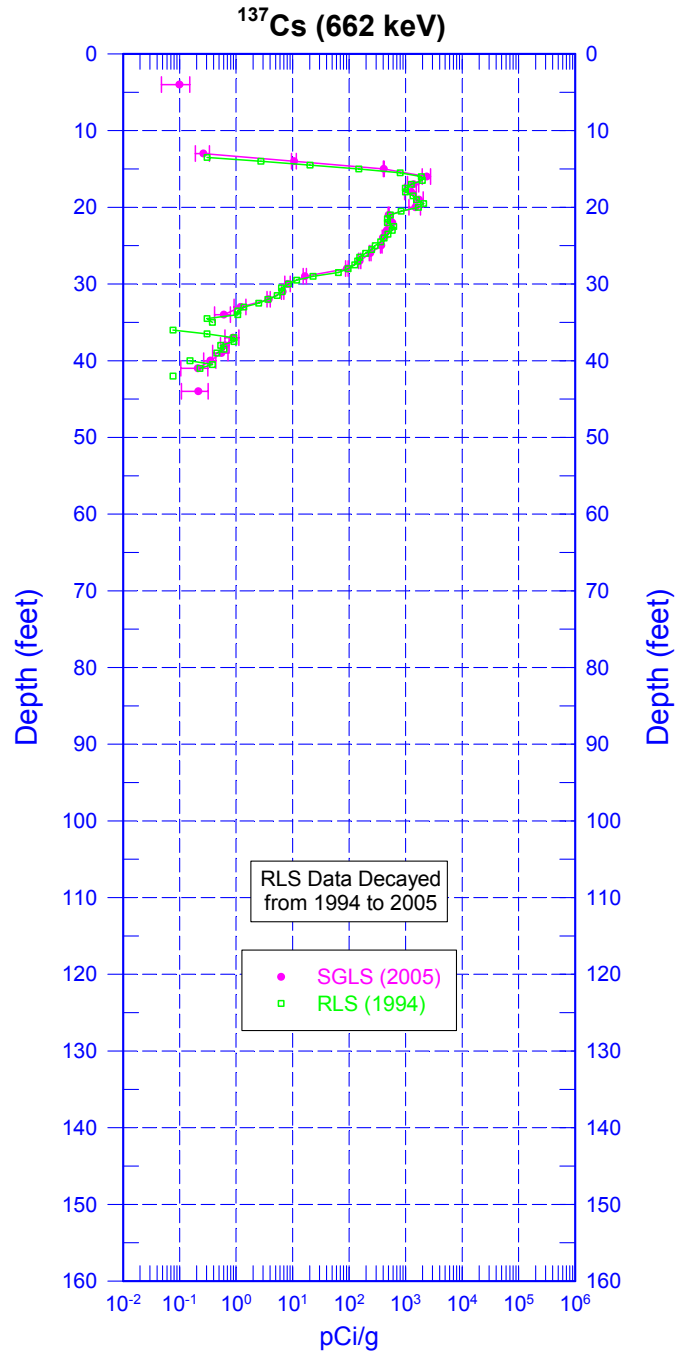
299-E28-91 (A6842)

Total Gamma & Dead Time



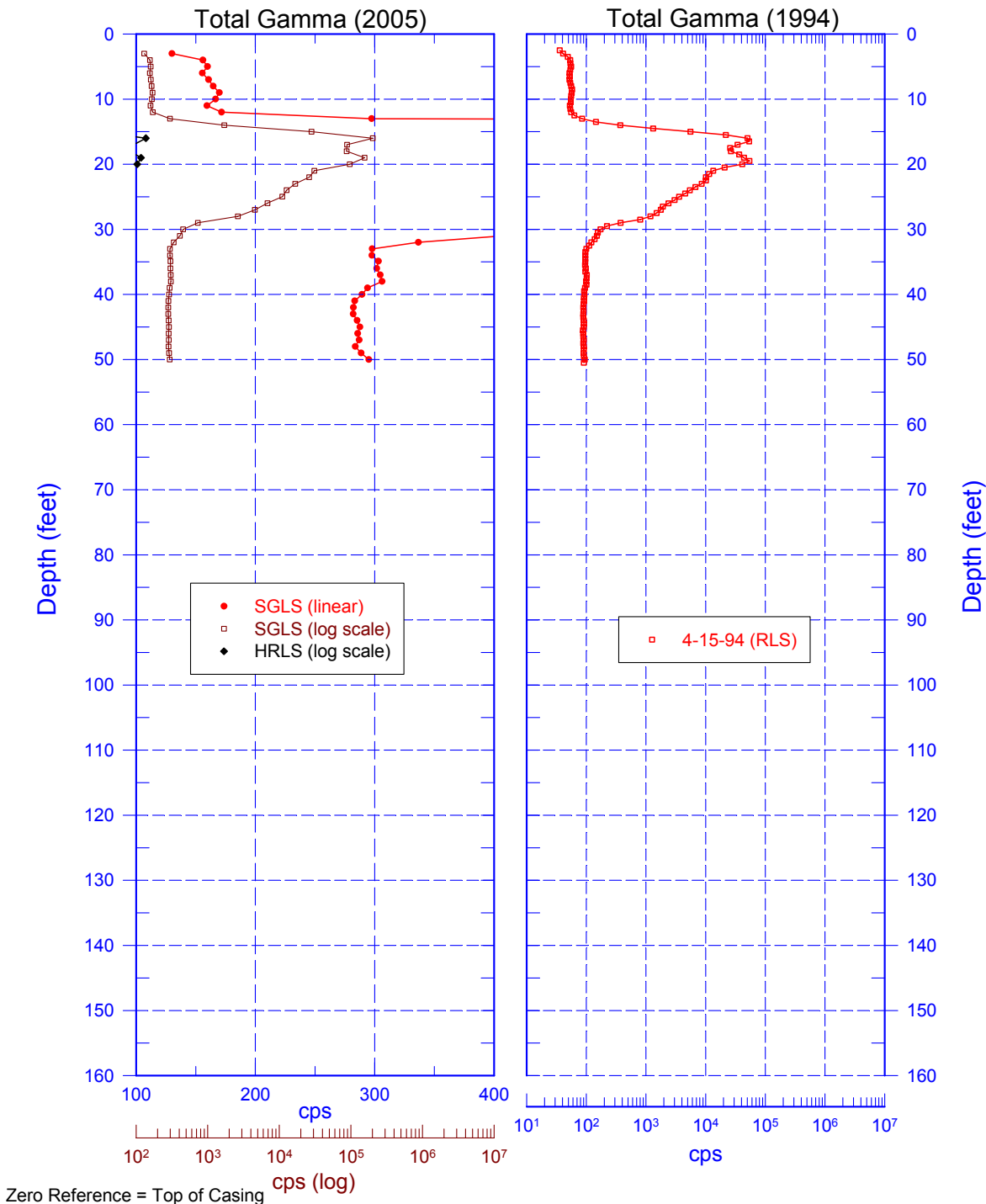
299-E28-91 (A6842)

SGLS & RLS Man-Made Radionuclide Comparison



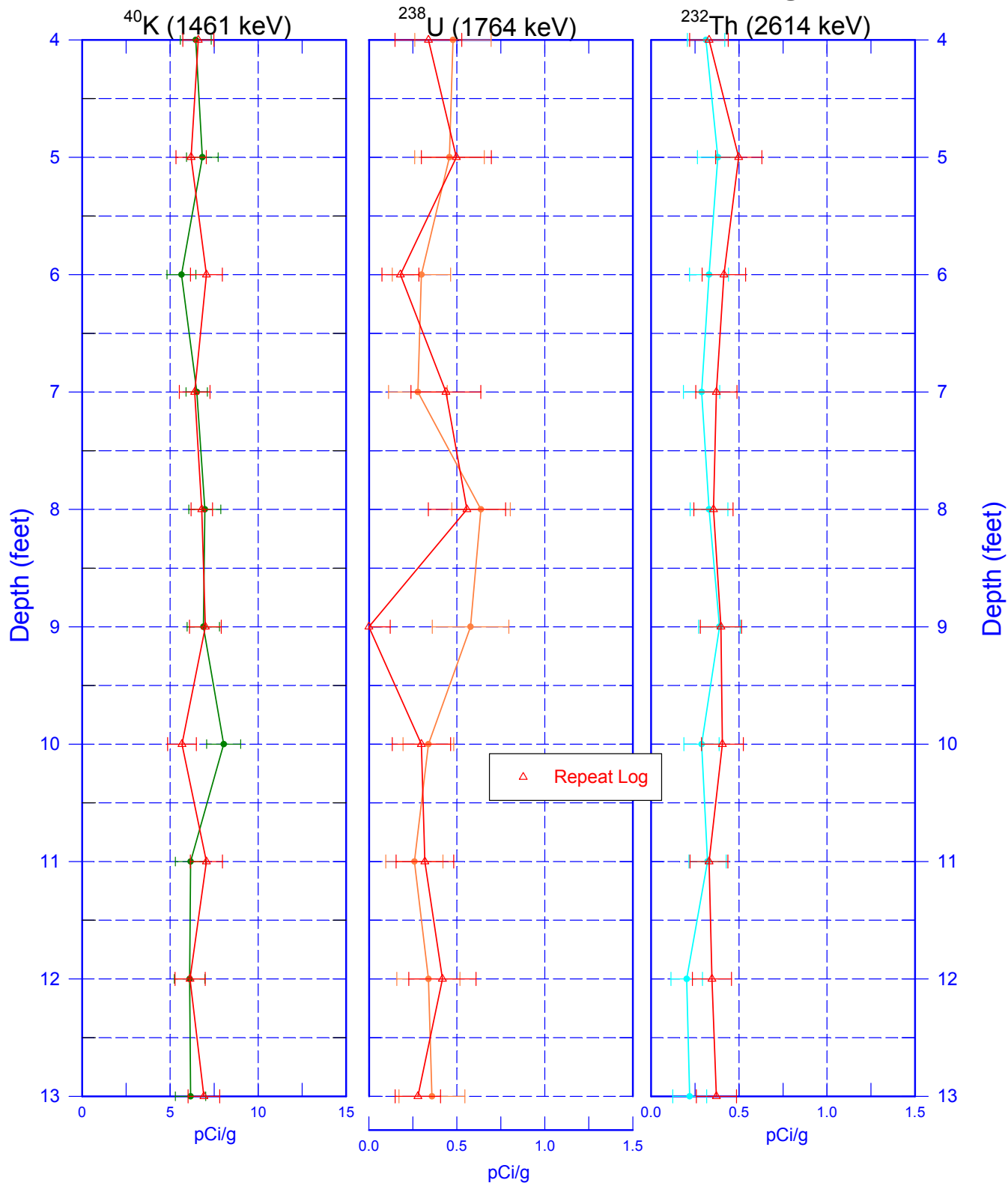
Zero Reference = Top of Casing

299-E28-91 (A6842) Total Gamma Logs



299-E28-91 (A6842)

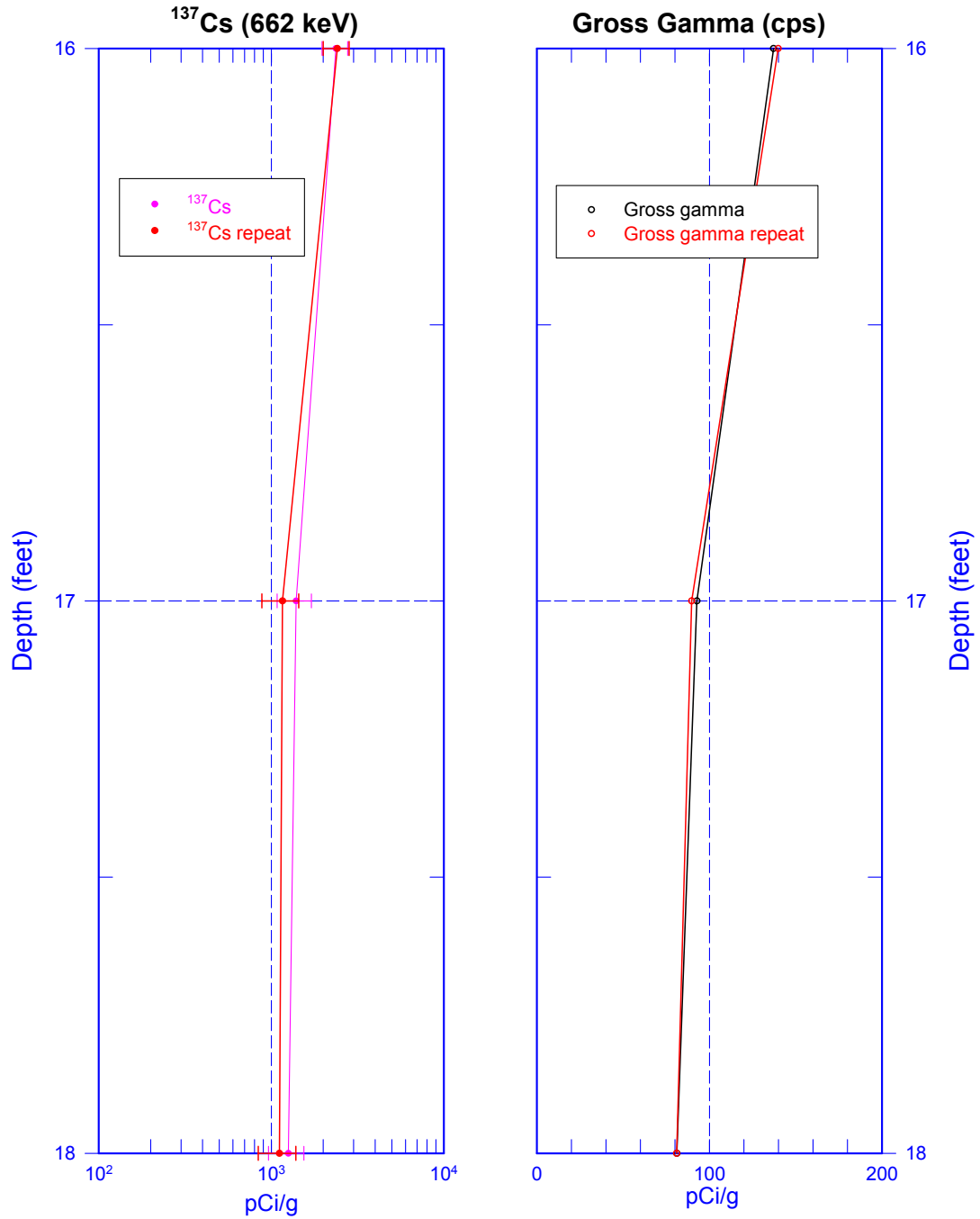
Repeat Section of Natural Gamma Logs



Zero Reference = Top of Casing

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HRLS Repeat Section



Zero Reference = Top of Casing